LAWRENCE LIVERMORE
REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: July 14-21, 2008.

Bioterrorism instrument used to screen for tuberculosis

LLNL physicist Paul Steele makes adjustments to the SPAMS system.

An instrument originally designed for detecting the malicious use of biological pathogens could be used in the public health sector to rapidly screen people for tuberculosis.

In experiments over the past year, an LLNL research team has used its system to detect a tuberculosis surrogate, even when it is surrounded by sputum and mucus-like substances.

The team also was able to differentiate between two similar bacteria, distinguishing between an avirulent strain of tuberculosis and a similar bacterium, *Mycobacterium smegmatis*.

Their research, using a system called Single-Particle Aerosol Mass Spectrometry, or SPAMS, is described in the July 15 edition of *Analytical Chemistry*, a semi-monthly journal published by the American Chemical Society.

For more information, go to
https://publicaffairs.llnl.gov/news/news_releases/2008/NR-08-07-04.html

Miller discusses future of Labs at DC hearing, roundtable

George Miller

Lawrence Livermore National Laboratory Director George Miller appeared in Washington, DC last week to answer questions regarding the future of the National Nuclear Security Administration complex.

Miller appeared before the Strategic Forces Subcommittee of the House Armed Services Committee Thursday. Also attending were NNSA Administrator Tom D'Agostino, Los Alamos National Lab Director Michael Anastasio, Sandia National Laboratories Director Tom Hunter, and several site and plant managers from the NNSA complex.

Miller provided a written statement to the subcommittee, which is chaired by Rep. Ellen Tauscher (D-Livermore). On Wednesday, Miller participated with the lab directors and D'Agostino in a special media roundtable to discuss the future of the NNSA complex.

For more on Miller's statement, see

https://publicaffairs.llnl.gov/news/lab_report/lab_report_art/072108_images/LLNL_Miller_HASC_071708.pdf

For more on the media roundtable, see
https://newsline.llnl.gov/articles/2008/jul/07.18.08_roundtable.php

Lab participates in Pacific Rim nuclear energy technology forum

Nuclear energy is on the rise once again in the Pacific Rim.

That was one of the perspectives last month at a two-day technology forum sponsored by the University of California Office of the President.

The “Asia-Pacific Forum on Integration of Sustainability, Safety and Security of Nuclear Technology,” held at UC Berkeley, attracted about 70 nuclear engineers, scientists, professors and atomic energy commission members from a number of nations, including Japan, China, South Korea and the United States.

South Korea, which receives about 35 percent of its electricity from nuclear power plants, and currently has 20 nuclear reactors, has six new units under construction. China now secures about 2 percent of its electricity from nuclear power, with 11 reactors, and has 12 reactors being built. In Japan -- which obtains 30 percent of its electricity from nuclear power plants and has 55 reactors -- three new reactors are under construction.

Three Livermore employees, including Dave McCallen, the program director for Nonproliferation within LLNL's Global Security Principal Directorate, played roles in the conference. In addition to serving on the program committee, McCallen helped organize and co-chaired a session on "Generation III Nuclear Technology."

"I thought it was a superb program," McCallen said. "One fact that stood out among these Asian nations is that while they know they need to solve the downstream waste issue, their nuclear industries are not fixated on that challenge or constrained in a major way. They are moving forward rapidly on nuclear energy expansion."

For more, go to https://newsline.llnl.gov/articles/2008/jul/07.18.08_conf.php

DOE program provides teachers hands-on science experience

High School science teacher Michael Sana is spending eight weeks conducting biotechnology research at LLNL.

Teacher Michael Sana is miles away from his home and students but is a natural fit in a small lab at Lawrence Livermore.

The Hawaiian is working with Brent Segelke of the Biosciences and Biotechnology Division of the Chemistry, Material, Earth and Life Science Directorate who is studying *Yersinia pestis* virulence, a bacterium that causes plague.

At Waipahu High School in Hawaii, Sana teaches Advanced Placement biology and general biology, but this summer, he is a student of biotechnology research in the Department of Energy 'Academies Creating Teacher Scientists' (DOE ACTS) program hosted by LLNL.

Along with working in the lab, Sana is learning technical writing skills, gaining hands-on instruction and application and getting acquainted with some of LLNL's programs and facilities.

The three-year ACTS program was designed by DOE's Office of Science to create a cadre of outstanding science and math teachers with the proper content knowledge and scientific research experience to serve as leaders and agents of positive change in their teaching communities.

For more, see https://newsline.llnl.gov/community/index.php

Laboratory computer scientist wins Fulbright scholarship

Steve Suppe

The Lab's computer scientist Steve Suppe has been awarded a Fulbright Student

Grant to study at the University of Haifa in Israel.

The Fulbright Program is sponsored by the U.S. State Department and allows students, scholars and career professionals access to graduate study, advanced research and teaching opportunities at institutions around the world. Suppe, who works in Global Security's Computing Application Division, was selected out of thousands of candidates for the prestigious grant and will work in conjunction with IBM Research Labs, also in Haifa.

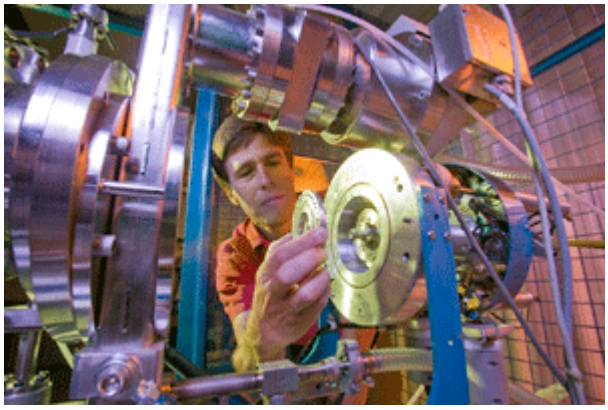
Although he officially starts his research in September, Suppe is using the rest of the summer to take Hebrew classes at the university to help prepare for life in Israel.

Suppe's Fulbright proposal emphasized both research and community service. On the research front, Suppe will study advanced techniques in information retrieval and data mining of unstructured text. He will focus on the representation, storage, organization and retrieval of unstructured data, with an emphasis on textual documents. This includes studying the uses and implementations of semantic search, index building and optimization and the integration of these technologies in a Web 2.0 world.

In his spare time, Suppe plans to volunteer for a variety of activities, from helping with basic computer support for schools and libraries to working in a broader role to help make the community a better place.

For more information, see the Web.
https://newsline.llnl.gov/articles/2008/jul/07.11.08_fulbright.php

Photo of the week



Ted Ognibene loads a sample in the NEC 1 MV Tandem Accelerator at the Laboratory's Center For Accelerator Mass Spectrometry (CAMS). CAMS develops and applies a wide range of isotopic and ion-beam analytical

tools used in basic research and technology development, including archaeology, paleoclimatology, paleoseismology, groundwater hydrogeology; carbon-cycle dynamics; oceanic and atmospheric chemistry; bioavailability, and metabolism of chemicals, toxic compounds and nutrients.

Photographer: Jacqueline McBride/LLNL

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LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the Livermore Lab Report, send e-mail mailto:labreport@llnl.gov.

The Livermore Lab Report archive, including today's issue, is available at: https://publicaffairs.llnl.gov/news/lab_report/2008index.html